

IN THE CLAIMS:

Please amend the claims as indicated below:

1. (Currently Amended) A computer-implemented method comprising the steps of:

5 creating a document stack from at least one word in a handwritten document;

creating a query stack from a query; and

determining a measure between the document stack and the query stack, where each query stack and document stack comprises a plurality of scores, wherein the measure is a dot product measure defined as follows

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$$\cos(\vec{q}, \vec{d}) = \frac{\vec{q} \cdot \vec{d}}{\sqrt{(\vec{q} \cdot \vec{q})(\vec{d} \cdot \vec{d})}},$$
 where  $\vec{q}$  is a vector comprising scores from the query stack, and wherein  $\vec{d}$  is a vector comprising scores from the document stack.

2.-9. (Cancelled)

15 10. (Currently Amended) A computer-implemented method comprising the steps of:

creating a document stack from at least one word in a handwritten document;

20 creating a query stack from a query; and  
determining a measure between the document stack and the query stack, The method of claim 1, wherein each stack is not constrained to words in a vocabulary, wherein each of the words in a query stack or document stack are comprised of a number of n-grams, wherein probabilities are determined for each n-gram of the query stack and document stack, and wherein the probabilities of the n-grams are used in the measure.

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11.-15. (Cancelled)

16. (Currently Amended) A computer-implemented method for retrieving a subset of handwritten documents from a set of handwritten documents, each of the handwritten documents having a plurality of document stacks associated therewith, the method comprising the steps of:

- 5 a) creating at least one query stack from a query comprising one or more words, wherein each word is handwritten or typed;
- b) selecting a handwritten document from the set of handwritten documents;
- c) selecting a document stack from the selected handwritten  
10 document;
- d) determining a measure between the at least one query stack and the selected document stack;
- e) performing steps (c) and (d) for at least one document stack associated with the selected handwritten document;
- 15 f) performing steps (b), (c), and (d) for each handwritten document of the set of handwritten documents;
- g) scoring each of the handwritten documents in the set of handwritten documents by using the query and the measures, thereby creating a number of document scores; and
- 20 h) selecting the subset of handwritten documents for display by using the document scores, wherein each stack is not constrained to words in a vocabulary, wherein each of the words in a query stack or document stack are comprised of a number of n-grams, wherein probabilities are determined for each n-gram of the query stack and document stack, and wherein the probabilities of the n-grams are used in the measure.

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17.-25. (Cancelled)

26. (Currently Amended) A computer-implemented method comprising the steps of:

- 30 creating a first word recognition stack, by using a first handwriting recognizer, from at least one word;

creating a second word recognition stack, by using a second handwriting recognizer, from the at least one word; and

comparing the first and second word recognition stacks with a third word recognition stack to determine whether a handwritten document should be retrieved;

5        configuring a handwriting recognizer into a first configuration to create the first handwriting recognizer; and

configuring the handwriting recognizer into a second configuration to create the second handwriting recognizer, wherein the first and second configuration are different, wherein the first configuration comprises a configuration caused by selecting a  
10 constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary, and  
         wherein the second configuration comprises a configuration caused by selecting a  
15 constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary.

20    27.-33.        (Cancelled)

34.                (Currently Amended) A computer system comprising:

         a memory that stores computer-readable code; and

         a processor operatively coupled to the memory, the processor configured  
25 to implement the computer-readable code, the computer-readable code configured to:  
         create a document stack from at least one word in a handwritten document;

         create a query stack from a query; and

         determine a measure between the document stack and the query stack,  
30 where each query stack and document stack comprises a plurality of scores, wherein the measure is a dot product measure defined as follows

$$\cos(\vec{q}, \vec{d}) = \frac{\vec{q} \cdot \vec{d}}{\sqrt{(\vec{q} \cdot \vec{q})(\vec{d} \cdot \vec{d})}},$$
 where  $\vec{q}$  is a vector comprising scores from the query stack, and wherein  $\vec{d}$  is a vector comprising scores from the document stack.

35. (Currently Amended) A computer system comprising:

5 a memory that stores computer-readable code; and

a processor operatively coupled to the memory, the processor configured to implement the computer-readable code, the computer-readable code configured to:

create a first word recognition stack, by using a first handwriting recognizer, from at least one word;

10 create a second word recognition stack, by using a second handwriting recognizer, from the at least one word; and

compare the first and second word recognition stacks with a third word recognition stack to determine whether a handwritten document should be retrieved;

15 configure a handwriting recognizer into a first configuration to create the first handwriting recognizer; and

configure the handwriting recognizer into a second configuration to create the second handwriting recognizer, wherein the first and second configuration are different, wherein the first configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary, and wherein the second configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a  
 20 constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary.  
 25 constraint wherein characters and words are hypothesized when not in a vocabulary.

36. (Currently Amended) An article of manufacture comprising:  
a computer readable medium having computer-readable code means embodied thereon, the computer-readable program code means comprising:

a step to create a document stack from at least one word in a handwritten document;

a step to create a query stack from a query; and

a step to determine a measure between the document stack and the query stack, where each query stack and document stack comprises a plurality of scores, wherein the measure is a dot product measure defined as follows

$$\cos(\vec{q}, \vec{d}) = \frac{\vec{q} \cdot \vec{d}}{\sqrt{(\vec{q} \cdot \vec{q})(\vec{d} \cdot \vec{d})}},$$
 where  $\vec{q}$  is a vector comprising scores from the query stack, and wherein  $\vec{d}$  is a vector comprising scores from the document stack.

37. (Currently Amended) An article of manufacture comprising:  
a computer readable medium having computer-readable code means embodied thereon, the computer-readable program code means comprising:

a step to create a first word recognition stack, by using a first handwriting recognizer, from at least one word;

a step to create a second word recognition stack, by using a second handwriting recognizer, from the at least one word; ~~and~~

a step to compare the first and second word recognition stacks with a third word recognition stack to determine whether a handwritten document should be retrieved;

a step to configure a handwriting recognizer into a first configuration to create the first handwriting recognizer; and

a step to configure the handwriting recognizer into a second configuration to create the second handwriting recognizer, wherein the first and second configuration are different, wherein the first configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language

constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary, and wherein the second configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter  
5 constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary.